The Horticultural Sector of Himachal Pradesh

Rationale for Horticultural Development

Land is one of the most important natural resources in the hills and its rational use assumes the utmost significance for the economic upliftment of the rural masses. It is obvious that the land use pattern in hilly areas is bound to be different from that in the other parts of the country, because of the type of terrain and unique climatic conditions. The continuous cultivation of agricultural crops has been responsible for the deterioration of the land resource base over the years. Besides, increasing population pressures and the adverse topography have forced farmers to

expand cultivation to steep slopes which are not inherently capable of sustained and intensive agricultural use without loss of soil productivity as a result of soil erosion. Apart from this, even from land physically fit for cultivation, the yields are comparatively lower than those obtained in the plains. The possibilities of expanding irrigation for agriculture in the hilly areas are also limited. The slopes and land aspect also limit the availability of sunlight to a great extent. Difficult access from farms to markets is yet another factor inhibiting the remunerative sale of crops other than high value ones.

The only choice open to the hill farmers is to exploit the advantage of climatic conditions by growing high value crops. The wide range of altitude, temperature, and precipitation, found in Himachal Pradesh, in fact, create conditions for growing a large number of temperate and sub-tropical fruits such as apples, pears, peaches, plums, almonds, walnuts, citrus fruits, mangoes, grapes, guavas, and litchis. The cultivation of these perennial horticultural crops enjoys certain advantages over other crops, e.g. (i) higher returns, (ii) more employment opportunities, (iii) conserves soil and reduces land degradation, besides avoiding silting of dams etc., (iv) helps to maintain proper ecological balance, and last, but not least, (v) provides raw material for the development of fruit- based processing industries. Therefore, it is clear that the cultivation of perennial fruit crops in hilly areas may be the only way to improve the income of the rural masses without disturbing the soil and destroying the ecology of the areas.

With this in mind, the State Government formulated policies and programmes to induce farmers to take up horticulture on a commercial basis. Owing to the persistent efforts of the State Government during the last three decades, horticulture has emerged as an important sector of the State economy, intimately linked to the economic uplift of the farming community.

The progress achieved on this front is evident from the fact that, whereas in the 1950s only about 800 hectares of land was devoted to fruit cultivation, this increased to 134,985 hectares in 1987 with an annual production potential of about 0.5 million tons.

Among the various fruits, apples occupy the top position, claiming over 38 per cent of the area and 58 per cent of the total fruit production. Thus, Himachal Pradesh is now known as the 'Apple State of India'. With a view to developing all the areas of the State simultaneously, efforts are also being made to induce farmers in the lower belts of the State to take up horticulture as an ongoing occupation to supplement their income. The results achieved so far reveal that there has been a rapid expansion of the area under sub-tropical fruit in this State.

Trends in Apple Production and Prices

The foregoing discussion reveals that the apple industry in the State has experienced a phenomenal expansion during the last three decades. As is shown in Table I, the increase in production has been due to both an expansion of apple orchards and a rise in productivity.

Area Expansion. At present, the total area under apples is recorded at 53,999 hectares, or about 10 per cent of the net cultivated area of the State. The area under apples increased at a compound growth rate of over eight per cent per annum during the period from 1961-85. However, period-wise analysis indicated higher growth rates in the initial plan periods which subsequently declined. On average, about 2,000 hectares of land was brought under apple cultivation each year during the period from 1961-85. The compound growth rate of the area declined to four per cent in 1974-85, as against 15 per cent for the period from 1961-74. It can be seen that apple cultivation in the State picked up momentum only in the post-independence era.

Table I: Compound Growth Rates of Area, Production, Productivity, and Prices of Apples

Period	Area	Production	Productivity	Prices
1961-65	35.34	21.47	-8.62	1.37
1965-68	15.78	32.22	16.27	2.60
1968-73	8.06	5.19	-18.28	0.08
1961-74	15.20	21.40	2.30	0.90
1974-78	4.95	18.12	11.55	0.25
1979-85	3.60	8.10	0.80	11.50
1974-85	4.10	9.60	4.50	7.30
1961-85	8.10	10.00	3.10	3.50

Source : HPMC

Production. Expansion of the area under apples was accompanied by an increase in production which registered a compound growth rate of over 10 per cent per annum against eight per cent in the case of area. A glance at the production figures would reveal that the production pattern has been erratic with no set pattern emerging during the period under study. It further reveals that the extent of fluctuation in production was higher before 1975, whereas, during the later period, fluctuations were contained to some extent. The lowest growth rate was observed in the period from 1968-73 and the highest during 1965-68; this can be attributed mainly to the climatic conditions prevailing during those periods.

Productivity. Interestingly, in the initial years, the negative growth rate in productivity was perhaps due to the method adopted to estimate growth rates. These were obtained by dividing production by total area (bearing and non-bearing). Although this method has some inherent deficiencies, because of lack of data a suitable alternative could not be developed to estimate productivity more accurately. The productivity figures indicate an improvement of 2.30 per cent during the period from 1961-74 and of 4.5 per cent during 1975-86, as against negative figures in the early fifties.

Prices. The wholesale price of apples (Delhi Market) increased at a compound growth rate of 3.5 per cent per annum. A sharp difference in the price behaviour for the periods from 1961-74 and from 1975-85 is rather interesting. The growth rate was very low, i.e. 0.90 per cent only, particularly before 1974, but this improved to 7.30 per cent later, showing a very positive achievement in this period. The positive effect on prices in the post-1975 period is attributed to

the implementation of an IDA aided Himachal Pradesh Processing and Marketing Project which helped to build up the necessary marketing infrastructure, on the one hand, and created desirable competition in the fruit market on the other, consequently completely avoiding price crashes in main markets, a recurring phenomenon observed in earlier years. Period-wise comparison indicates that the period from 1979-85 registered the highest compound growth rate of over 11 per cent in the price of apples. It is worthwhile to mention that this was the period during which most of the HPMC's activities/infrastructural facilities were placed on a commercial basis.

Conventional Marketing Arrangements

Main Feature of the System. The apple crop is normally ready for picking in the 2-3rd week of July, particularly in lower areas, and continues until October. August and September are the peak harvesting periods, when about 60-80 per cent of the crop is despatched to various markets. The growers are required to make advance arrangements for procurement and packing material so that the fruit can be marketed immediately after picking, sorting/grading, and packing. Generally, the fruit is picked by hand, placed in a basket known as a *Kilta* and brought to a common place for grading and packing. Conventionally, apples are classified into various homogeneous lots based on their size and quality characteristics. The quality specifications followed in the State are A, B, and C. 'A' grade should have over 50 per cent of the colour characteristics of the variety, should appear clean and bright, free from blemishes, and be of typical shape. 'B' grade fruit may have less than 50 per cent of the colour characteristics of the variety and may accommodate a slightly abnormal shape also. 'C' category fruits include those which are not fit for competitive marketing, for example, fruit with fresh injuries, spots, or an irregular shape. 'A' and 'B' categories are again classified on the basis of size, such as Super, Large, Extra Large, Large, Medium, Small, Extra Small, and *Pittoo*. Size grading is generally done by hand.

After grading, the fruits are wrapped in old newspaper and packed in wooden boxes. The size specification of wooden boxes varies; however, there are two types more commonly in use known as the Shimla box and the *Kullu Dabba*. The former can hold about 18 kg. The packed boxes are marked with specifications such as name and variety, size and quality, grade, name of the orchard, etc. After packing, the produce is hauled to the nearest road-head and despatched to the market. The produce is generally despatched through forwarding agents who operate in large numbers during the season. These forwarding agents make arrangements for transport to the markets and charge a fee for this service. Sometimes the forwarding agent also makes arrangements for the supply of packing material and labour for local transportation.

Although there are about eight identified channels used by growers to market their produce, the most popular of these is through a forwarding agency to a commission agent/wholesaler to the retailer in the market. This channel alone accounts for over 60 per cent of the total marketed produce. Delhi is the nearest traditional market for Himachal apples and earlier accounted for over 80 per cent of the total fruit sent from the State.

After the arrival of the fruit in the market, it is auctioned to determine the price for specific sizes and grades. The most common method of selling fruit in the Delhi market is the *Hatha* system. It is often classified as an auction but is more in the form of a closed tender. Buyers and sellers clasp their hands under a piece of cloth and the prices are determined by feeling each other's fingers. Other participants, including the owner of the lot, do not know the price offered or accepted.

After conducting the sale, a sale memo is prepared by the commission agent indicating the price per box, gross sale and expenditure incurred, inclusive of freight, commission, and other charges and the net amount is remitted to the growers.

Deficiencies of the Conventional Marketing System. It is worthwhile to mention here that with the big increase in apple production, marketing has developed in importance and complexity. The age old traditional marketing system could not keep pace with the problems that emerged as the system involved numerous deficiencies. The major deficiencies observed are discussed in the following paragraphs.

Grades and Standards. Constitute an agreed market language which can greatly simplify the marketing process and reduce marketing costs. Product grades and standards also furnish an ethical basis for buying and selling. Without the development of such standards, the principle of *caveat emptor* would prevail along with confusion and unfairness. Although grades for apple have been developed conventionally, these have not been followed strictly in the actual grading of produce as this is performed manually on individual farms. This allowed for subjective classification of produce, leading to variations in quality even from box to box, let alone from orchard to orchard. Thus buyers had to inspect several boxes from each lot, a time consuming process, besides providing scope for commission agents to manipulate and exploit the growers.

There were almost no cold storage facilities in the producing areas, and these are essential for (i) pre-cooling the fruit soon after picking to prolong shelf life, (ii) avoidance of gluts, and (iii) reduction of pressure on transportation during the peak harvesting season. Such facilities also facilitate the advantage of selling fruit in the off-season. Thus far, due to the absence of such facilities in the producing areas, growers have had no option but to sell their entire stock immediately after harvesting, often causing market gluts and frequent price crashes, thereby adversely affecting their returns.

The absence of adequate processing facilities to utilize available cull fruit was another stumbling block in the conventional marketing system. The availability of fruit for processing was estimated at 15-20 per cent of the total production, and this used to go to waste in the absence of any alternative use/value. Some of this fruit used to be sent to the market, thereby adversely affecting the sale of the good quality fruits, causing a loss to farmers.

The apple harvesting season in Himachal Pradesh coincides with the rainy season. Roads in the producing areas were not built to all-weather standards and were subjected to wash outs and frequent blockades. The terrain in the apple growing areas is so steep that it necessitates porterage to the nearest road-head. Lack of suitable link roads in the apple producing areas inhibited the quick transportation of produce to markets, resulting in the spoilage of fruit during transit.

The apple marketing system was based on the monopoly of private traders, placing the fruit growers at the mercy of commission agents. The profiteering tendencies of these private traders deprived the growers of competitive prices. One of the peculiar and dominant features of the selling process was the *Hatha* system mentioned earlier.

The higher marketing cost was another dominant feature of the conventional apple marketing system in Himachal Pradesh. Studies conducted by the Agro-Economic Research Centre, Himachal Pradesh University, revealed that the producer's share was as low as 50 per cent of the consumer's rupee. The main components of the marketing cost were the cost of packing material, labour, freight, and service charges paid to various intermediaries.

Delhi was the major market for 'Himachal apples', receiving over 80 per cent of the State's total apple produce and there was no horizontal expansion of markets. This sole dependence on one market was risky, as there were frequent manipulated gluts.

The marketing of perishables like apples poses yet another problem. After harvesting, these fruits remain alive, their rate of metabolism mainly depending on temperature, and they are likely to be damaged by heat or cold. Besides, these fruits are bulky and easily damaged by rough handling. Therefore, special attention and expertise is required in the post-harvest management of these fruits so as to ensure the delivery of quality fruit to the consumers. This special expertise has hitherto been lacking and not enough attention has been paid to the improvement of post-harvest handling.

Government Policies

Government Institutions. The main responsibility for the development of horticulture rests with the State Government. However, of late, in order to provide proper direction and financial assistance for various related programmes, a separate horticultural Division has recently been established in the Central Ministry of Agriculture. Earlier, no separate long-term strategies were formulated for fruit crops at the national level because, until recently, horticulture was only a part of the Crop Division of the Ministry of Agriculture and practically no attention was paid to its development. Recognizing the importance of horticulture at State and national level and in order to support this activity through long-term strategies, the Government of India recently set up a National Horticultural Board.

The State Government recognised the fact that fruit production should no longer be a minor adjunct of the day to day activities of farmers, particularly where ideal location and climate offer vast potential for the expansion of fruit production. Therefore, the essential components of fruit production have been built into the State's overall strategy of economic development.

Planting Material and Other Inputs. The State Government policy, with regard to the establishment of nurseries for fruit tree seedlings, is to develop fruit plant multiplication facilities, both in the public and private sector, backed by nursery certification regulations. The Government has also adopted a unique growth centre approach by establishing a chain of progeny-cum-demonstration orchards and nurseries in all potential fruit growing areas with the objective of i) stocking progeny trees of outstanding merit for the supply of budwood, ii) multiplication of pedigree and disease-free planting materials, and iii) to serve as a nucleus for the development of horticulture in this zone. With a view to inducing farmers to adopt horticulture as a vocation, a wide range of economic incentives in the form of institutional credit facilities and liberal subsidies for production inputs are now available from the Government. The State Government is also extending help to fruit growers to control fruit diseases, a 50 per cent subsidy being made available for essential pesticides and plant protection equipment. Credit support facilities, both short-term and long-term, are easily available from commercial banks for the development and maintenance of fruit plantations under special schemes refinanced by the National Bank for Agriculture and Rural Development (NABARD).

Research and Extension. In order to ensure an effective delivery system and the implementation of horticultural programmes, the State Government established a separate Directorate of Horticulture in 1970, charged exclusively with the responsibility to formulate and implement horticultural development plans. Research and Development support to the fruit industry is provided by the Universities in the State. Earlier, the State had only one Agricultural University, but, recently, a new university concentrating mainly on horticulture and forestry has been set up.

Support Prices. 'With a view to ensuring remunerative prices to fruit growers, the State Government has introduced price stabilization measures by announcing support prices for various fruits grown in the State. It has been observed that the timely announcement of support prices

avoids the otherwise recurring phenomenon of price crashes. Himachal Pradesh is the first State in India to fix support prices for horticultural produce. The various fruits covered by this scheme are: apples, hill lemons, oranges, *kinnows*, guavas, and limes. The support prices announced particularly favour small orchardists as a special price is given to them. The implementation of the scheme has been assigned to HMPC by the State Government.

Packing Materials. Another important State policy is to replace the conventional timber-based wooden containers by Corrugated Fibre Board (CFB) cartons to conserve the fast depleting natural forest wealth of the State. The State Government proposes to switch over to the use of CFB cartons in a phased manner, and there will be a complete ban on the use of wooden based packing by 1990. In order to popularise the cartons, the State Government has fixed the sale price of cartons lower than that of wooden boxes. These cartons are at present heavily subsidized by the Government. Arrangements for their purchase and sale are assigned to HPMC. A State-owned company has been incorporated for the manufacture of the cartons and is likely to go into production in 1990.

The Himachal Pradesh Apple Processing and Marketing Project

With a view to bringing about improvements in the existing marketing system and keeping pace with technological advances in the post-harvest handling of fruit, as introduced in the horticulturally advanced countries of the world, in the late sixties the State Government introduced the idea of an integrated marketing project financed by external sources.

Project Formulation. The project was first proposed by the Department of Horticulture. However, a World Bank Mission was later invited to study the prospects of modernising the State apple trade. The Mission concluded that the immediate need was to concentrate on improving the marketing system rather than on production. Project preparation was further assigned to experts from the FAO-Cooperative Programme in 1972. The project prepared by the FAO experts included the construction of link roads, packing houses, collection centres, cold storage, transshipment centres, consulting services, technical assistance, training, etc.

Project Components. The World Bank appraised the project in September, 1972. The appraisal team, however, recommended additional items to be included in the project such as an apple processing plant and the construction of cable lines to and from more inaccessible orchards. Further improvements were incorporated in the project by the follow-up appraisal mission in 1973, and these included the establishment of a new State enterprise to administer the marketing and processing of apples. The final project consisted of the following components:

- twelve packing houses;
- three collection centres;
- a transshipment centre;
- four cold stores;
- a juice concentration plant;
- construction of 97 km of new roads and improvements;
- training and technical assistance; and
- project evaluation studies.

The project was broadly divided into two components (i) commercial buildings, cold storage, an apple processing plant, and a transshipment centre and (ii) non-commercial components such as the construction of roads, procurement of road maintenance equipment, and training and technical assistance. The earlier components were to be implemented by the newly set up State-owned company known as the Himachal Pradesh Horticultural Produce Marketing and Processing

Corporation Ltd (HPMC), whereas the latter were to be taken up by the respective State Departments. The total project cost was estimated at US$ 21.7 million (Rs 325 million) with US$ 13 million as IDA credit to cover the entire foreign exchange and 35 per cent of local costs. Funds for the commercial components were channelled by the Government of India through NABARD and participating commercial banks to HPMC, and, for non-commercial components, through the State Plans and the Department of Horticulture and PWD.

Project Benefits. The major financial and economic benefits anticipated from the project at the time of appraisal were (i) surplus funds to be generated by HPMC, (ii) incremental income to fruit growers utilising the HPMC marketing system, (iii) incremental income on account of the sale of processed grade fruit which otherwise had no alternative use or value, and (iv) incremental income to other farmers in the project area and road user benefits which were expected to be generated by the road development component. The Economic Rate of Return (ERR) of the project, at the time of appraisal, was estimated at 23 per cent which was quite attractive. It was, therefore, considered desirable to take up the project for the overall welfare of fruit growers in the State.